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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,156	11/12/2003	Tai-Chun Huang	TSM03-0340	7569
25962	7590	12/15/2005		
SLATER & MATSIL, L.L.P. 17950 PRESTON RD, SUITE 1000 DALLAS, TX 75252-5793			EXAMINER OWENS, DOUGLAS W	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H-7

Office Action Summary	Application No. 10/706,156	Applicant(s) HUANG ET AL.	
	Examiner Douglas W. Owens	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-15 and 21-29 is/are allowed.
- 6) ☒ Claim(s) 1,4-6,16 and 19 is/are rejected.
- 7) ☒ Claim(s) 2,3,7,17,18 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 21, 2005 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4 – 6, 16 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,069,400 to Kimura et al.

Regarding claim 1, Kimura et al. teach a method of manufacturing an inter-level dielectric layer of a semiconductor device (Fig. 4, for example), the method comprising:

forming a first low-dielectric constant material sub-layer (5) over a substrate, the first low-dielectric constant material having at least one first material property;

forming a second low-dielectric constant material sub-layer (3) over the first low-dielectric constant material sub-layer, the second low-dielectric constant material sub-

layer having at least one second material property, wherein the at least one second material property is different from the at least one first material property; and

forming a third low-dielectric constant material sub-layer (6) over the second low-dielectric constant material sub-layer, the third low-dielectric constant material sub-layer having at least one third material property, the at least one third material property being different from the at least one second material property, wherein the first low-dielectric constant material sub-layer, the second low-dielectric constant material sub-layer, and the third low-dielectric constant material sub-layer form a single ILD layer.

Regarding claim 4, Kimura et al. inherently teach a method, wherein manufacturing the ILD layer comprises forming the first low-dielectric constant material sub-layer, second low-dielectric constant material sub-layer, and third low-dielectric constant material sub-layer while adjusting the deposition conditions. The different material layers require adjusting deposition conditions.

Regarding claim 5, Kimura et al. inherently teach a method, wherein adjusting the deposition conditions comprises adjusting the power, since deposition of each layer would require different power.

Regarding claims 6 and 19, Kimura et al. teach a method wherein the first material property, second material property and third material property comprise density and dielectric constant.

Regarding claim 16, Kimura et al. teach an inter-level (ILD) layer of a semiconductor device (Fig. 4), comprising:

a first low-dielectric constant material sub-layer (5) over a substrate, the first low-dielectric constant material having at least one first material property;

a second low-dielectric constant material sub-layer (3) over the first low-dielectric constant material sub-layer, the second low-dielectric constant material sub-layer having at least one second material property, wherein the at least one second material property is different from the at least one first material property; and

a third low-dielectric constant material sub-layer (6) over the second low-dielectric constant material sub-layer, the third low-dielectric constant material sub-layer having at least one third material property, the at least one third material property being different from the at least one second material property, wherein the first low-dielectric constant material sub-layer, the second low-dielectric constant material sub-layer, and the third low-dielectric constant material sub-layer form a single ILD layer.

Allowable Subject Matter

4. Claims 8 – 15 and 21 – 29 are allowed.
5. Claims 2, 3, 7, 17, 18 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

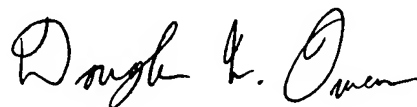
6. Applicant's arguments with respect to claims 1 – 29 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Douglas W Owens
Examiner
Art Unit 2811